

## Sixth Grade Science Curriculum Bundle # 6



Title	Suggested Dates
Conservation of Energy	Dec. 6-Dec. 17 (9.5 days)

Big Idea/Enduring Understanding	Guiding Questions
<p>Energy can be transferred from one object to another</p> <p>Energy can be transformed from one type to another</p>	<p>What are different forms of energy and how do they apply to every day activities?</p> <p>What happens to energy during a transfer (lost/gained)?</p>

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	Specificity & Examples	Suggested Resources (Read the note above)
<b>To access additional resources, go to: S:\PISD Public\Science Curriculum Resources\6th Grade Resource Activities</b>		
<p><b>6.9 Force, motion, and energy. The student knows that the Law of Conservation of Energy states that energy can neither be created nor destroyed, it just changes form. The student is expected to:</b></p> <p><b>6.9A</b> investigate methods of thermal energy transfer, including conduction, convection and radiation.</p>	<p style="color: red;">Including:</p> <p style="color: red;">---Use Pages 514-515 as reference for vocabulary words: convection, conduction and radiation.</p> <p style="color: red;">---Tie to the movement of thermal energy everywhere, not just in the atmosphere</p>	<p style="color: red;"><b>Vocabulary:</b> energy, thermal energy/ heat energy, conduction, convection, radiation, chemical energy, mechanical energy, nuclear energy, light energy, solar energy, electrical energy, energy transfer, energy transformation</p> <p><b>AVID Activity-</b>Writing in Science pages 22-23 “Pre-write and Quickwrite”</p> <p><a href="http://step.nn.k12.va.us/technology/pasco/glx/glx_labs/Radiation.doc">http://step.nn.k12.va.us/technology/pasco/glx/glx_labs/Radiation.doc</a> Lab Activity</p> <p><a href="http://www.brainpop.com">www.brainpop.com</a>; Search Energy</p> <p><b>Core Activity:</b> <a href="http://www.uwsp.edu/cnr/wcee/keep/Mod1/Whatis/experiments.htm">http://www.uwsp.edu/cnr/wcee/keep/Mod1/Whatis/experiments.htm</a> Scroll down to Spoon Experiment</p> <p><b>Lab Activity:</b> Quick Lab on Page 515</p> <p><b>Lab Activity:</b> <a href="http://www.mcrcel.org/whelmers/whelm03.asp">http://www.mcrcel.org/whelmers/whelm03.asp</a></p>

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<p><b>6.9 Force, motion, and energy. The student knows that the Law of Conservation of Energy states that energy can neither be created nor destroyed, it just changes form. The student is expected to:</b></p> <p><b>6.9B</b> verify through investigations that thermal energy moves in a predictable pattern from warmer to cooler until all the substances attain the same temperature such as an ice cube melting</p>	<p><b>Including:</b></p> <ul style="list-style-type: none"> <li>--- that thermal energy moves in a predictable pattern from warmer to cooler until all the substances attain the same temperature such as an ice cube melting</li> </ul>	<p><b>PreAP Lab Activity:</b>  <a href="http://www.infinitepower.org/pdf/09-Lesson-Plan.pdf">http://www.infinitepower.org/pdf/09-Lesson-Plan.pdf</a></p> <p><b>PreAP Lab Activity:</b> <a href="http://www.umaine.edu/NSFGK-12/images/PDFs/IceMeltcomPM.pdf">http://www.umaine.edu/NSFGK-12/images/PDFs/IceMeltcomPM.pdf</a></p> <p><b>Core Activity:</b>  <a href="http://teachers.plainfield.k12.in.us/ddones/documents/MicrosoftWord-4StatesofMatter.pdf">http://teachers.plainfield.k12.in.us/ddones/documents/MicrosoftWord-4StatesofMatter.pdf</a></p>
<p><b>6.1 The student, for at least 40% of instructional time, conducts laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.</b></p> <p><b>6.1A</b> demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standard</p>	<p><b>Including:</b></p> <ul style="list-style-type: none"> <li>--- Chemical use and disposal</li> <li>--- Electrical &amp; heat safety</li> <li>--- Safe practices with lab equipment</li> <li>--- Implement District Safety Contract</li> <li>--- Operate in accordance with the Texas Safety Standards</li> </ul> <p><u>Teacher Note:</u> Safety skills and process TEKS should be embedded and reinforced throughout the year.</p>	<p><a href="#">Texas Safety Standards</a></p>
<p><b>6.1 The student, for at least 40% of instructional time, conducts laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.</b></p> <p><b>6.1B</b> practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials</p>	<p><b>Including:</b></p> <ul style="list-style-type: none"> <li>--- Recycle lab material</li> </ul>	
<p><b>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</b></p> <p><b>6.2A</b> plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology;</p>	<p><b>Including:</b></p> <ul style="list-style-type: none"> <li>--- Independent and dependent variables</li> <li>--- Controls</li> <li>--- Procedures</li> <li>--- Materials</li> <li>--- Using a standard lab report format</li> </ul>	<p>Emphasize Observation skills and organizing data during the Ice Cube Lab.</p> <p>AVID Activity- Writing in Science pages 55-94  “Experimental Design Lab Report Activities”</p>

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<p><b>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</b></p> <p><b>6.2B</b> design and implement experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology;</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>--- Independent and dependent variables</li> <li>--- Controls</li> <li>--- Procedures</li> <li>--- Materials</li> <li>--- Using a standard lab report format</li> </ul>	<p>Emphasize Observation skills and organizing data during the Ice Cube Lab.</p> <p><b><u>AVID Activity-</u></b> Writing in Science pages 55-94 “Experimental Design Lab Report Activities”</p>
<p><b>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</b></p> <p><b>6.2C</b> collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>--- Collecting information using the metric system                             <ul style="list-style-type: none"> <li>• Introduce metric system</li> </ul> </li> <li>--- Pre-AP: Emphasis on using probeware in a variety of situations</li> </ul>	<p>Graphic Organizers for convection, conduction, radiation</p> <p><b><u>AVID Activity-</u></b> Writing in Science pages 26-28 “Observation Narrative”</p> <p><b><u>AVID Activity-</u></b> Reading in Science pages 111-132 “Additional Active Reading Graphic Organizers”</p>
<p><b>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</b></p> <p><b>6.2D</b> construct tables and graphs, using repeated trials and means, to organize data and identify patterns;</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>---Graphing of temperatures</li> <li>--- Organization of data                             <ul style="list-style-type: none"> <li>• data charts</li> </ul> </li> <li>--- Graphing data-bar graph &amp; line graph                             <ul style="list-style-type: none"> <li>• label each axis with name and units</li> <li>• provide a descriptive title</li> </ul> </li> </ul>	
<p><b>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</b></p> <p><b>6.2E</b> analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>--- Look for trends and/or patterns specific in the data and/or graph</li> <li>--- Relate conclusion to hypothesis/problem</li> <li>--- Identify sources of error/ways to improve investigation</li> <li>--- Communicate conclusion effectively in writing</li> </ul>	<p><b><u>AVID Activity-</u></b> Writing in Science pages 29-30 “Comparative Analysis”</p>
<p><b>6.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</b></p> <p><b>6.3B</b> use models to represent aspects of the natural world such as a model of Earth's layers;</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>--- Conceptual                             <ul style="list-style-type: none"> <li>• Scientific Method</li> <li>• How thermal energy moves</li> </ul> </li> <li>--- Mathematical                             <ul style="list-style-type: none"> <li>• Graphs to make predictions about temperature</li> </ul> </li> <li>--- Physical                             <ul style="list-style-type: none"> <li>• Energy Devices used to melt ice</li> </ul> </li> </ul>	

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<p><b>6.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</b></p> <p><b>6.3C</b> identify advantages and limitations of models such as size, scale, properties, and materials;</p>	<p><b>Including:</b>            ---Limitation: Student error on temperature reads            ---Advantages: Can actually see convection currents            Lab performed</p>	
<p><b>6.4 The student knows how to use a variety of tools and safety equipment to conduct science inquiry.</b></p> <p><b>4A</b> use appropriate tools to collect, record, and analyze information, including journals/notebooks, beakers, Petri dishes, meter sticks, graduated cylinders, hot plates, test tubes, triple beam balances, microscopes, thermometers, calculators, computers, timing devices, and other equipment as needed to teach the curriculum;</p>	<p><b>Including:</b>            --- Journals/notebooks            --- Data collection tools as appropriate            ---hot plate/candle            ---thermometer/probeware</p>	
<p><b>6.4 The student knows how to use a variety of tools and safety equipment to conduct science inquiry.</b></p> <p><b>6.4B</b> use preventative safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher.</p>	<p><b>Including:</b>            ---Safety emphasized when using heat sources</p>	